



# MATHEMATICS + BERKELEY

Newsletter of the Department of Mathematics at the University of California, Berkeley

## FALL 2013

MESSAGE FROM THE CHAIR

### FROM RENEWAL TO REGROWTH

Dear Friends,

The theme of the chair's letter last year was renewal, marked by new leadership in the department as well as new initiatives that we hope will lead to an exciting period of regrowth of our department. We are very pleased with how these initiatives are coming to fruition and are excited to report on several more that we will be rolling out in the next year.

#### Growth

As demand for education in scientific fields grows, so does demand for instruction in mathematics. We have nearly a thousand more students enrolled in our courses this year compared to last year, a 15% increase. The frontiers of mathematical research are also expanding explosively, in ways that can't be quantified. Our department has continued to innovate in both instruction and research, endeavors which are intimately bound together in departments like ours.

To keep pace with the rapidly changing landscape, our first priority is to renew and regrow our faculty. This year we have two new ladder faculty arrivals: Associate Professor Katrin Wehrheim (symplectic geometry and low-dimensional topology) and Assistant Professor Vivek Shende (algebraic geometry and topology). You will find their profiles on page 2. Our recruitment efforts will redouble this year, with up to four faculty positions to be filled.



Chair Arthur Ogus

Retiring are Alexandre Chorin, long one of the leaders of our group in Applied Mathematics, who will however remain active as a Professor of the Graduate School, and Robert Bryant, whose directorship of MSRI ended in June.

Our accountant Nancy Palmer also retired; although her wisdom and experience will be missed, we are very happy with the dynamism of her replacement, Heather Read.

I am continuing to serve as Department Chair, and Martin Olsson remains our Vice Chair for Graduate Affairs, but Denis Auroux has temporarily relinquished his role as cochair to resume teaching this fall. Michael Christ will be Vice Chair for Faculty Affairs and Fraydoun Rezakhanlou, Vice Chair for Undergraduate Affairs.

#### Renovated Facilities

Last year we were very happy to have completed the renovation of the departmental common room in 1015 Evans, along with an adjacent faculty lounge. We are continuing with ambitious capital improvements this year, including new photo displays, a new mailroom, a new graduate student lounge, and an exciting interactive space on the newly refinished ninth floor outdoor patio. These last two projects were financed in part by a very generous donor; we are extremely grateful both for his financial support and for his contributions to the very careful design planning, which also involved students, faculty, staff, and several outstanding architects.

#### New courses

We wrote last year about our new course designed to offer undergraduates intending to major in life sciences an introduction to the mathematical tools they will need to cope with the rapidly changing research perspectives in biology, psychology, and sociology. This course is now coming into its own and is generating wide interest across many fields. This year Math 10A has an enrollment of over 250 students.

Starting this spring, our department will also be one of ten which will participate in the new Berkeley Connect mentoring program, designed to help students succeed in their major and to forge ties among undergraduates, graduates, and faculty. Funded by private donors with matching funds from campus, this initiative will allow us to combine the best aspects of a large research university like ours with the intimacy provided by a small college environment.

#### Honors

Our faculty continues to maintain its position at the cutting edge of research, as evidenced by its new crop of awards and honors. These are too numerous to

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FROM RENEWAL TO REGROWTH  
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list here, except for a few highlights:

- Ian Agol received the American Mathematical Society Veblen Prize and the London Mathematical Society Senior Berwick Prize for his proof of Thurston's Virtual Fibring Conjecture.
- Rob Kirby, the PAM Divisional Library prize for his publishing company's contribution to open access scientific literature.
- John Lott, the National Academy of Sciences Award for Scientific Reviewing.
- Hugh Woodin, the Hausdorff Medal, for his work on set theory.
- James Sethian was elected to the National Academy of Sciences.

Furthermore, we recently learned that two of our faculty, Vera Serganova and Ian Agol, were selected to be among the twenty-one Plenary Speakers at the upcoming International Congress of

Mathematicians in Seoul in 2014, chosen to reflect the most exciting developments in research in the last four years.

Based on honors like these, as well as research publications and Ph.D. placements, our department retains its rank as the top public university mathematics department in the world, according to the Shanghai rankings and a number of other metrics.

### Thanks

I am deeply grateful for the help, both technical and conceptual, that Denis Auroux provided during his year as Co-chair for Strategic Planning, and for the support and guidance of Mark Richards in his role as Dean of the Division of Mathematical and Physical Sciences.

The department staff is as remarkable as the faculty in making our community function as well as it does, and I want especially to thank our Department Manager Mary Pepple, who was nominated for

an "Excellence in Management" award by the staff, a fitting followup to her having won the Chancellor's Outstanding Staff award last year.

Finally, we would like to thank those of you who have supported the Berkeley Math Department over the past years, and those who may be thinking of doing so in the future. Both the State of California and the federal government are cutting back their support of higher education and research, and it is in no small part thanks to contributions by alumni and other friends that we have been able to compete with our better-funded private peers and maintain our standing as the top mathematics department in a public institution in the world.

*Arthur Ogus, Chair*

*Professor Ogus (PhD Harvard 1972) has been a member of the department faculty since 1974. His research area is algebraic geometry. Professor Ogus became Department Chair in Fall 2011.*



#### FACULTY PROFILES

### NEW FACULTY

#### Vivek Shende

Assistant Professor Vivek Shende joins our department from MIT. His research area is algebraic geometry. Shende's work relates enumerative geometry and singularities of plane curves

to knot invariants and geometric representation theory. Shende was an undergraduate student at the University of Michigan. After a stint in a quantum computing research group in the Department of Chemistry at UC Berkeley, he became a graduate student at Princeton University, where he obtained his PhD in 2011 under the supervision of Rahul Pandharipande. After graduating from Princeton he became a Simons Postdoctoral Fellow at MIT.

#### Katrin Wehrheim

Associate Professor Katrin Wehrheim comes to UC Berkeley from MIT, where she joined the faculty in 2005. Wehrheim is an expert in symplectic topology, gauge theory and geometric analysis. She is best known for her work on pseudo-holomorphic curves and Floer homology. Wehrheim obtained her PhD from ETH Zürich in 2002 as a student of Dietmar Salamon; her dissertation was awarded the ETH Medal. She was an Instructor at Princeton University and a Postdoctoral Fellow at the Institute for Advanced Study before taking a tenure track position at MIT. She received a Sloan Fellowship in 2007, and the Presidential Early Career Award for Scientists and Engineers in 2010. In 2012 she became a Fellow of the American Mathematical Society.



## FAREWELLS AND WELCOMES

### Ladder Faculty

Even as we welcome two new members of the ladder faculty, Associate Professor **Katrin Wehrheim** and Assistant Professor **Vivek Shende** (see their profiles on page 2), we must also bid farewell to some of our esteemed colleagues:

Professor **Alexandre Chorin**, who had been a leader of our group in applied mathematics, retired in June 2013. He will however remain active as a Professor of the Graduate School. Professor **Robert Bryant** also retired in June 2013, at the end of his term as director of MSRI. These colleagues have made many remarkable contributions to mathematics and to the Department, and we wish them well.

We are very saddened by the death of our former colleague Professor Emeritus **Paul L. Chambré**, who had joined our faculty in 1951 and held positions jointly in Mathematics and Nuclear Engineering until his retirement in 1989.

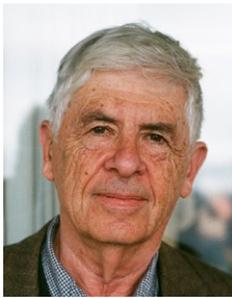
### Staff

**Nancy Palmer**, who had been the Accountant for our department for ten years, retired in December 2012.

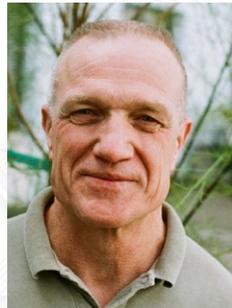
On the other hand, we are very happy to welcome several new staff members:

- **Heather Read** is our new Accountant. Heather is a Berkeley alumna and brings to our department 11 years of experience in accounting, finance and payroll in various units on campus;
- **Yue Liu** is our new Human Resources and Payroll Analyst;
- **Sarah Lirio** is the department's new Contracts and Grants Assistant;
- **Igor Savine** is the department's Computer Systems Administrator;
- **Brandon Eltiste** is our new web developer;
- **Celene Reyes** is our current Administrative Assistant for the Math Diagnostic Testing Project.

We were also fortunate to have **Barbara Hightower** with us as an interim Student Advisor during the last few months.



Prof. Alexandre Chorin



Prof. Robert Bryant



Nancy Palmer



Heather Read

## Lecturers, Postdocs and Visitors

The department is welcoming a lecturer and several postdoctoral fellows this fall:

**Marius Beceanu** (PDEs and Analysis), PhD University of Chicago 2009, Morrey Assistant Professor.

**Alexander Coward** (Topology), D.Phil. Oxford 2008, Lecturer.

**Tim Cramer** (Representation Theory), PhD Yale 2013, RTG Postdoctoral Fellow.

**Kenji Kozai** (Geometry / Topology), PhD Stanford 2013, RTG Postdoctoral Fellow.

**Andrew Lawrie** (PDEs and Analysis), PhD University of Chicago 2013, NSF Postdoctoral Fellow.

**Gang Liu** (Differential Geometry), PhD University of Minnesota 2013, Morrey Assistant Professor.

**Fei Lu** (Applied Mathematics), PhD University of Kansas 2013, Postdoctoral Fellow.

**Takuya Machida** (Probability), PhD Yokohama 2010, JSPS Research Fellow.

**Matthias Morzfeld** (Applied Mathematics), PhD UC Berkeley 2011, Postdoctoral Fellow.

**Sung-Jin Oh** (PDEs and Analysis), PhD Princeton 2013, Miller Research Fellow.

**You Qi** (Representation Theory), PhD Columbia 2013, Morrey Assistant Professor.

**Adam Topaz** (Arithmetic Geometry), PhD U. Penn. 2013, NSF Postdoctoral Fellow.

**Yan Zhang** (Algebraic Combinatorics), PhD MIT 2013, Morrey Assistant Professor.



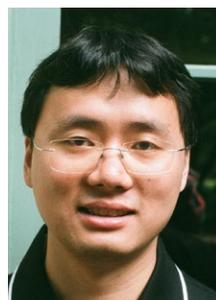
Marius Beceanu



Alexander Coward



Gang Liu



You Qi



Yan Zhang



Sung-Jin Oh

We are also hosting a number of distinguished Visiting Scholars, including **Sigurd Assing**, **Natasha Blitvić**, **Jean Bourgain**, **Martin Davis**, **Gunnar Fløystad**, **Allen Knutson**, **Kevin Lin**, **Andreas Malmendier**, **Robert McCann**, **Pedro Rios**, **Dana Scott**, **Yuuki Takai**, **Ignacio Villanueva**, **John Voight**, **Michelle Wachs**, and **Haiyan Zhu**. Finally, **Yann Brenier** is this year's Chancellor's Visiting Professor.

## AWARDS AND HONORS

### Faculty and Staff Honors

- Professor **Ian Agol** received the 2013 Oswald Veblen Prize of the American Mathematical Society;
- Professor **James Sethian** was elected to the National Academy of Sciences;
- Professor **Daniel Tataru** was selected by the Simons Foundation to be a Simons Investigator;
- Professor **John Lott** received a Simons Sabbatical Fellowship, as well as the 2013 National Academy of Sciences Award for Scientific Reviewing;
- Professor **Hugh Woodin** was the inaugural recipient of the Hausdorff Medal of the European Set Theory Society;
- Professor **Craig Evans** was appointed to the Class of 1961 Collegium Chair;
- Professor **Lior Pachter** was the recipient of a Glenn Award for Research in Biological Mechanisms of Aging;
- Professor **James Demmel** received the 2013 Charles Babbage Award of the IEEE International Parallel & Distributed Processing Symposium;
- Professor **Robion Kirby** and Berkeley-based Mathematical Sciences Publishers received the Special Libraries Association's PAM Division Award;

### 2014 ICM Speakers

Two of the 21 plenary talks at the 2014 International Congress of Mathematicians, to be held in Seoul, Korea, will be given by **Ian Agol** and **Vera Serganova**. The program also features **Constantin Teleman** and **Antonio Montalbán** as sectional invited speakers.



Ian Agol



Vera Serganova

### Faculty Promotions

• **Mina Aganagic** was promoted from Associate Professor to Professor;

• **Per-Olof Persson** and **Lauren Williams** were promoted from Assistant Professor to Associate Professor.



Mina Aganagic



Per-Olof Persson



Lauren Williams

- Assistant Professor **Lauren Williams** received the Prytanean Faculty Award;
- Professor **Ken Ribet** was the recipient of the department's 2012-2013 Distinguished Teaching Award;
- Department Manager **Mary Pepple** won the 2012-13 Excellence in Management Award.

### Graduate Student Honors

- **Semyon Dyatlov** was awarded a five-year Clay Research Fellowship. His dissertation also earned him the Herb Alexander Prize.
- The Bernard Friedman Memorial Prize in Applied Mathematics was awarded to **Robert Saye** and **Vladislav Voroninski**.
- The Kenneth Ribet & Lisa Goldberg Award in Algebra was awarded to **Daniel Halpern-Leistner**.

### Fellows of the AMS

Thirty-four of our faculty and emeriti (more than any other institution) are members of the inaugural class of Fellows of the American Mathematical Society: David Aldous, William Bade<sup>l</sup>, George Bergman, Elwyn Berlekamp, Richard Borcherds, Robert Bryant, Paul Chernoff, Alexandre Chorin, James Demmel, David Eisenbud, Craig Evans, Steve Evans, David Goldschmidt, Mark Haiman, Robin Hartshorne, Morris Hirsch, Michael Hutchings, Robion Kirby, T. Y. Lam, Calvin Moore, David Nadler, Ken Ribet, Marc Rieffel, James Sethian, Charles Stone, Bernd Sturmfels, Daniel Tataru, Dan-Virgil Voiculescu, Paul Vojta, Katrin Wehrheim, Alan Weinstein, Lauren Williams, and Joseph Wolf. They were recently joined by new Fellow Edward Frenkel.

- **Dario Beraldo** was awarded the Nikki Kose Memorial Teaching Prize.
- **Peyam Tabrizian** was the recipient of a Teaching Effectiveness Award.
- **Daniel Appel, Natth Bejrarnin, Shuchao Bi, Julia Erhard, Jason Ferguson, Daniel Lanoue, Danielle Maddix, George Melvin, Ralph Morrison, Markus Vasquez, Andreas Voellmer, Linda Westrick, Christopher Wong, and Kevin Wray** were 2012-2013 recipients of Outstanding Graduate Student Instructor Awards.
- 2013 PhDs **Theodore Johnson-Freyd** and **Daniel Halpern-Leistner** were awarded NSF Postdoctoral Research Fellowships.

### Undergraduate Honors

- The 2012-2013 Departmental Citation was awarded to Class of 2013 Valedictorian **Luca Weihs**.
- **Indraneel Kasmalkar** received a Honorable Mention for his performance in the 2012 Putnam Competition.
- **Shiyu Li** received a Honorable Mention in the Schafer Prize competition.
- **Sichao He, Michael Landry** and **Luca Weihs** were awarded the Dorothea Klumpke Roberts Prize in Mathematics in recognition of their truly exceptional scholarship.
- **Olof Delight, Joseph Ferrara, Chi-Sing Ho, Jean-Michel Maldague, Michael Reinhard, Jia Tian, Kay Walker, Andrew Whalen** and **Sanghan Yoon** were awarded the Percy Lionel Davis Award for Excellence in Scholarship in Mathematics.

## GRADUATE PROGRAM NEWS

*Prof. Martin Olsson, Vice Chair for Graduate Affairs*

Our graduate program remains one of the top rated graduate programs worldwide (in the most recent US News ranking of math graduate programs we tied for second place), and *the* top graduate program among public universities in the United States. The excellence, energy, and creativity of our graduate students continue to be key drivers of the success of the department in research and teaching.

This past year we welcomed 27 new students to our PhD program, seven of whom were international students. The enter-

ing cohort was selected from an extraordinarily talented group of applicants, and includes some of the most promising young mathematicians in the country and worldwide.

Last year we awarded 28 PhDs and 7 Masters degrees. Many of these degree recipients went on to academic postdoctoral positions in mathematics, including prestigious positions at many of the top institutions around the world. Among them, Semyon Dyatlov was the recipient of a prestigious five-year Clay Research Fellowship; see Semyon's profile on page 6. We also saw several of our graduate students take their mathematical skills into industry positions.

Our graduate students have won numerous awards and fellowships; several of them were also honored with departmental prizes at last year's commencement ceremony (see page 4).

### Congratulations to our students who received their PhDs this past academic year!

**Daniel Berwick Evans**, "Supersymmetric Sigma Models, Partition Functions and the Chern-Gauss-Bonnet Theorem," under Peter Teichner. Daniel is now a Szegö Assistant Professor at Stanford University.

**Scott Cramer**, "Inverse Limit Reflection and the Structure of  $L(V_{\lambda+1})$ ," under Hugh Woodin. Scott is now a Triennial Assistant Professor at Rutgers University.

**Daniel Cristofaro-Gardiner**, "Some Results Involving Contact Homology," under Michael Hutchings. Daniel is now a Member at the Institute for Advanced Study.

**Andrew Critch**, "Algebraic Geometry of Hidden Markov and Related Models" under Bernd Sturmfels. Andrew will be a Postdoctoral Fellow at the Mathematical Biosciences Institute at Ohio State.

**Michael Daub**, "Complex and p-adic Computations of Chow-Heegner Points," under Ken Ribet. Michael is now a Visiting Assistant Professor at UC Irvine.

**John Delonno**, "Quasi-Variational Inequalities for Source-Expanding Hele-Shaw Problems," under Craig Evans.

**Jeffrey Donatelli**, "Reconstruction Algorithms for X-ray Nanocrystallography via Solution of the Twinning Problem," under James Sethian. Jeffrey is a Postdoctoral Fellow at the Lawrence Berkeley National Lab.

**Semyon Dyatlov**, "Resonances in General Relativity," under Maciej Zworski. Semyon is now a Clay Research Fellow at MSRI and MIT.

**Julia Erhard**, "The Carlson-Simpson Lemma in Reverse Mathematics," under Theodore Slaman. Julia works for Apple as a Research Scientist.

**Boris Ettlinger**, under Daniel Tataru. Boris is now an Associate Research Scholar at Princeton University.

**Bradley Froehle**, "High-Order Discontinuous Galerkin Fluid-Structure Interaction Methods," under Per-Olof Persson. Bradley now works for Google.

**Subhroshekhar Ghosh**, "Rigidity Phenomena in Random Point Sets," under Yuval Peres and David Aldous. Subhroshekhar is now a Postdoc at Princeton University.

**Vinicius Gripp**, "The Asymptotics of ECH Capacities and Absolute Gradings on Floer Homologies," under Michael Hutchings. Vinicius is a Postdoc at the University of Nantes.

**Daniel Halpern-Leistner**, "Geometric Invariant Theory and Derived Categories of Coherent Sheaves," under Constantin Teleman. Daniel is now an NSF Postdoctoral Fellow at Columbia University.

**Michael Hartglass**, "Planar Algebras, Free Probability, and the Multicolored Guionnet-Jones-Shlyakhtenko Construction," under Vaughan Jones. Michael is now a Visiting Assistant Professor at University of Iowa.

**Conrad Hengesbach**, "Prescribed Mean Curvature Systems," under Robert Bryant.

**Alexandru Hening**, "Two Models of Default from Finance and a Model of Invasion from Ecology," under Steve Evans. Alexandru is now a Postdoc at the University of Oxford.

**Gregory Igusa**, "Generic Reduction and Work with Partial Computations and Partial Oracles," under Theodore Slaman. Gregory is now a Visiting Assistant Professor at the University of Notre Dame.

**Theodore Johnson-Freyd**, "Perturbative Methods in Path Integration," under Nicolai Reshetikhin. Theodore is now a Boas Assistant Professor at Northwestern University

**Michael Kazi**, "Surface Reconstruction from Volume Fraction Data Using Variational Level

Set Methods," under James Sethian. Michael now works at the MIT Lincoln Laboratory.

**Jakub Kominiarczuk**, "Acyclic Monte Carlo," under Alexandre Chorin. Jakub is now a Postdoc at the University of Bristol.

**Kevin Lin**, "Two Studies of Topological Quantum Field Theory in Two Dimensions," under Constantin Teleman.

**Lilit Martirosyan**, "The Representation Theory of the Exceptional Lie Super-Algebras," under Vera Serganova and Joseph Wolf. Lilit is now a Warschawski Assistant Professor at UC San Diego.

**Trevor Potter**, "Dynamics and Stability of Rolling Viscoelastic Tires," under Jon Wilkening. Trevor now works for Proofpoint.

**Robert Saye**, "The Voronoi Implicit Interface Method with Applications to Multiphase Fluid Flow and Multiscale Modelling of Foam Dynamics," under James Sethian. Robert is now a Postdoctoral Fellow at the Lawrence Berkeley National Lab.

**Nam Trang**, "Generalized Solovay Measures, the HOD Analysis, and the Core Model Induction," under John Steel. Nam is now a Postdoc at Carnegie Mellon University.

**Matthew Tucker-Simmons**, "Quantum Algebras Associated to Irreducible Flag Manifolds," under Marc Rieffel.

**Vladislav Voroninski**, "Phaselift: A Novel Framework for Phase Retrieval," under John Strain. Vladislav is now a Postdoc at MIT.

**Hwajong Yoo**, "Modularity of Residually Reducible Galois Representations and Eisenstein Ideals," under Ken Ribet. Hwajong is now a Research Associate at the University of Luxembourg.

## ALSO IN THE NEWS

### Distinguished Lectures

- The 2012 Serge Lang Undergraduate Lecture was given on November 16<sup>th</sup>, 2012 by **John Baez** of UC Riverside, on “*The Mathematics of Planet Earth*.”
- The 2013 DiPerna Lecture was given by **Alan Newell** of the University of Arizona on January 24<sup>th</sup>, 2013. The title of his talk was “*Phyllotaxis as a Pattern Forming Front*.”
- The 2013 Alfred Tarski Lectures were given by **Jonathan Pila** of Oxford University. The series of three lectures, given on April 22<sup>nd</sup>, 24<sup>th</sup> and 26<sup>th</sup>, was on “*Rational Points of Definable Sets and Diophantine Problems*.”
- The Spring 2013 Chern Lectures were given by Shiing-Shen Chern Visiting Professor **Nigel Hitchin**, of Oxford University, on April 9<sup>th</sup>, 11<sup>th</sup>, 16<sup>th</sup> and 18<sup>th</sup>. The titles of the talks were “*Quaternionic Manifolds*”, “*Moduli Spaces*”, “*Twistors and Holomorphic Geometry*”, and “*Correspondences*.”
- The Fall 2013 Chern Lectures were given by Fields Medalist **Stanislav Smirnov**, of Geneva University and St. Petersburg State University, on November 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup>. The talks were entitled “*The Ising Model of a Ferromagnet from 1920 till 2020*”, “*CFT and SLE and 2D Statistical Physics*”, and “*Self-Avoiding Walk on the Hexagonal Lattice*.”

### 2013 Commencement

The Department of Mathematics’ 2013 Commencement Ceremony took place on May 22<sup>nd</sup> in Zellerbach Auditorium. This year’s commencement speaker was Professor **Barry Mazur** of Harvard University. The ceremony saw nearly 250 mathematics and applied mathematics majors receive undergraduate degrees, while nearly 40 graduate students received Masters and PhDs; a number of departmental prizes (both graduate and undergraduate) were also awarded during the ceremony.

### Semyon Dyatlov Awarded Clay Research Fellowship

Semyon Dyatlov, who received his PhD last May under the supervision of Maciej Zworski, has been awarded a five-year Clay Research Fellowship.

Semyon’s research area is mathematical analysis, and more specifically microlocal analysis, which investigates manifestations of the classical/quantum (particle/wave) correspondence in the theory of partial differential equations. Semyon’s work applies those methods, and methods from the theory of dynamical systems, to problems in scattering theory, quantum chaos, and mathematical general relativity. One of his research interests is the study of scattering resonances, which generalize the concept of bound states to open systems. Resonances appear in particular when studying long-time behavior of linear waves on noncompact manifolds, or decay of classical correlations for chaotic flows.



Semyon Dyatlov

In his thesis, Semyon develops a new microlocal framework to describe asymptotics of resonances and phase space concentration of associated resonant states under dynamical assumptions motivated by the wave equations on rotating black holes. In another series of works he investigated the behaviour of generalized plane waves and of scattering phases, with particularly striking results when the classical dynamics is chaotic.

During his time at Berkeley, Semyon has written 16 research papers and taught a number of classes. He is spending this Fall at MSRI, and will move to MIT in 2014.

### Shanghai Rankings

According to the 2013 Academic Ranking of World Universities in Mathematics recently published by Shanghai Jiao Tong University, the UC Berkeley math department again occupies the third place worldwide, just behind Princeton and Harvard. Cambridge and Paris 6 round out the top five this year.

### Berkeley Connect

Our department will be one of ten to participate in the launch of the Berkeley Connect mentoring program next semester. Berkeley Connect aims to offer participating undergraduates an enhanced community experience and increased access to faculty and graduate student mentors. Participating students are placed in small discussion groups (at most 20 students) assigned to an experienced graduate student mentor, with bi-weekly meetings on a variety of topics relevant to math majors, such as how to write a proof. The program also includes one-on-one advising meetings, and special events featuring mathematics faculty and alumni, including a career panel.

Professor **Thomas Scanlon** serves as the program’s Faculty Director, and Associate Professor **Antonio Montalbán** is its co-director. Graduate students **Gwyneth Harrison-Shermoen** and **Pablo Solis** will serve as mentors in Spring 2014.

### Gifts to the Department

The generosity of the alumni and friends of the Department was once more evident this past year. We thank all the donors whose gifts, large and small, made a key difference in the life of the department. We are especially grateful for three large gifts received this past year:

- Thanks to the generosity of the Friends of Berkeley Mathematics and especially a key donor among them, the department is proceeding with major improvements to the outdoor patio on the ninth floor of Evans Hall, and creating a graduate student lounge in the adjacent space formerly occupied by the mail room; see the article on page 8.
- A generous gift from Mr. Eric Yopes and Ms. Amelia Kaymen has established the Paul F. Yopes Fund, which will provide

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DEPARTMENT OF MATHEMATICS,  
UNIVERSITY OF CALIFORNIA AT  
BERKELEY

## MATHEMATICS + BERKELEY

*The Department of Mathematics  
wishes to thank all alumni, parents,  
students, faculty, staff and friends who  
support the Department.*

### You may return this form to:

Heather Read, Donor Relations  
University of California  
Department of Mathematics  
979 Evans Hall, #3840  
Berkeley, CA 94720-3840

## Your Gift Is Welcome!

- Enclosed is my gift of \$ \_\_\_\_\_  
*Please make your tax deductible gift for the Department of Mathematics payable to "UC Regents."*
- \$5000    \$1000    \$500    \$250    \$100    Other \$ \_\_\_\_\_
- In addition, (company name) \_\_\_\_\_ will match my gift.  
The company matching gift form    is enclosed    will be mailed
- Please direct my gift to the Department of Mathematics Annual Fund, to be used for the Department's greatest need at the Chair's discretion.
- I prefer to designate my gift for undergraduate scholarships.
- I prefer to designate my gift for graduate student fellowships.
- I prefer to designate my gift for (other) \_\_\_\_\_
- Send me information on charitable estate and gift planning or on establishing an endowment.

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Address \_\_\_\_\_  
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You can also donate to the Department of Mathematics online at:

<http://math.berkeley.edu/about/donate>

The information you provide will be used for University business and will not be released unless required by law. A portion of all gifts is used to defray the costs of administering the funds. All gifts are tax-deductible, as prescribed by law.

### DEPARTMENT NEWS

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merit-based support to undergraduate students in the Math department. The fund honors Paul Yopes, who graduated from the College of Engineering in 1935, and Thomas Yopes, Paul's grandson and the son of Eric and Amelia, who is currently an undergraduate student in the Math Department.

- A generous gift from an anonymous donor has established the Graduate Student Support Fund in Mathematics, which will provide fellowships for graduate students in our department.

We also extend our heartfelt thanks to the many friends of the department who contributed to the Kobayashi Memorial Fund and to other funds that support the department in its various missions.

### A Note on Strategic Priorities

The Department of Mathematics is working hard to maintain its excellence in all aspects of research and education and to bridge the resource gap that separates us from our better-funded private peers.

For this we continue to rely crucially on donations from alumni and friends of the Department. Here are some of the department's current top priorities:

- **Graduate Student Fellowships** are vitally needed to enable the department to make competitive, attractive offers to the very strongest applicants to our graduate program, who are otherwise often lured by our private peers with offers of higher stipends and lower teaching loads.

*Note: UC Berkeley is currently offering (through calendar year 2013) a Graduate Student Support matching program for major gifts made to endow graduate student support funds.*

- **Endowed Faculty Chairs** are needed in order to improve the department's ability to make competitive offers for the recruitment and retention of world-class faculty.

- **Research Visitor Funds** would make it easier to invite high-profile visitors to visit Berkeley to deliver lectures in our department or collaborate with our faculty. These intellectual exchanges are of tremendous value to our research and education.

We invite you to join us in keeping UC Berkeley Mathematics strong through your gifts to the department. All donations, large or small, are greatly valued. You may choose whether to direct your gift toward a specific goal of your choice or to have your donation used at the department's discretion.

We also take this opportunity to mention the 2013-14 New Alumni Challenge. Thanks to the generosity of a group of donors who are funding this challenge, a dollar-for-dollar match is available for donations made by our newest group of alumni from the classes of 2009-13 and this year's graduating class of 2014. Even small donations go a long way: for example, a \$50 donation becomes a \$100 gift to the Math department. Don't miss this opportunity to double your gift in support of Math and to join the ranks of those who are helping us maintain our excellence and our world-class research and education programs.

*For further information, please contact Prof. Arthur Ogus, Chair, e-mail: [ogus@math.berkeley.edu](mailto:ogus@math.berkeley.edu)*

# MATHEMATICS + BERKELEY

FALL 2013 NEWSLETTER

## DEPARTMENT NEWS

### FACILITIES UPDATE

The department has been pursuing several capital improvement projects to support its core missions in education and research. Last year saw a major and long overdue renovation of the department's common room, 1015 Evans, as well as the creation of a faculty lounge area next to it. This year we are continuing our efforts to rehabilitate the department's most valuable spaces and turn them into functional and welcoming interaction areas for the mathematics community at large, and for students in particular.

#### Ninth Floor Courtyard

The outdoor patio area on the ninth floor of Evans Hall, which had fallen into disrepair and was not being used to its full potential, is being renovated and improved as part of a project that began this past summer and will be completed by year's end.

Funds from Campus Capital Projects allowed us to demolish the old concrete patio, repair and reseal the faulty roof membrane under it, and install a paver system that is both visually more appealing and easier to maintain.

This served as the starting point for a thorough redesign of the courtyard area, made possible by a generous donation by the Friends of Berkeley Mathematics.



The new design takes into account issues such as traffic flow, light, noise, and weather mitigation. New furniture, a new color scheme designed to reduce glare, and other architectural improvements such as overhead shades will turn the patio into a welcoming area where faculty, students and staff can interact, socialize, and work in small groups.

We are also embarking on a more modest project to improve the ninth floor South side lobby with new signage and photo displays.

#### Graduate Student Lounge

A study lounge with natural light had long been one of our graduate students' top requests, and was identified last year as a departmental priority. The project came to life this past summer thanks to the same donor who funded the improvements to the courtyard.

The new graduate student study lounge will be located in the space adjacent to the patio that was previously occupied by the departmental mail room. (The mail slots were moved to the copy room 958 Evans.) This lounge will greatly



Works in progress: left, the 9<sup>th</sup> floor patio; above, the new graduate student lounge, both on November 7<sup>th</sup>.

improve student quality of life and help make our graduate program more attractive to prospective students.

#### Opening soon...

The design and project specifications for the courtyard and graduate lounge were elaborated by architects and designers Reed Dillingham, William R. Glass and Liz Abdulhadi, in concertation with Department Manager Mary Pepple, Building Coordinator Kathy Santos, L&S Facilities Managers Brian Joseph and Ruben Mejia, Project Manager Antonio Leony, a departmental task force, and the generous donor who funded the project. We thank them all for their time and efforts.

Work is progressing well, and the new Friends of Math Interactive Courtyard Area and Graduate Student Lounge will be open by the end of 2013.

#### Newsletter Contributors

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